

**Sustained interest in
the content**

**Ability to utilize tools for
learning, not just for the
sake of novelty**

Whole-class participation

**Everyone can be confident in
some part of a difficult task
when it is multimodal**

**Persistence through
a difficult task**

**Accessibility for multiple levels
of pre-existing student
knowledge and skills**

**Collect multiple data points
from a simulation**

**Use authentic data (overlays) to
make sense of concepts**

**Decide what variable is best for
the situation**

**Access information and
experiences that are generally
unavailable in everyday life**

**Construct a specific claim, and
provide evidence and reasoning
to support the claim**

**Explore the simulation
freely before focusing
on specific features**

The only way to become proficient in content is to interact with it. Learning by watching is useful but doesn't provide deeper confidence and ability to do a task.

Simulations, as a tool, are used over a short timeframe. This scale is effective for tasks focused on learning content, but it is not long enough for skill development, which occurs gradually.

While knowledge itself is important, content must be paired with relevant skill development when teaching how to think. The ability to use knowledge or apply it to solving problems relies on understanding how to use appropriate tools.

Brains use memories and knowledge like paths; the more significant the "landmarks" and the frequency of the "visits," the easier it is to remember the way along the path.

When students are given autonomous learning opportunities more often, they show more autonomy and become more empowered learners.

Simulations change how learners distribute their mental energy (cognitive load) to increase how much goes toward working through learning-specific complexity.